

# Fact Sheet

Aquifer Protection Permit Inventory # 105310 Place ID 1675, LTF # None BHP Copper Inc., Copper Cities Unit

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an aquifer protection permit for the subject facilities that covers the life of the facilities, including operational, closure, and post closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18-9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requirements of the Aquifer Protection Program: 1) meet Aquifer Water Quality Standards at the Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

## I. FACILITY INFORMATION

## **Name and Location**

Permittee's Name:	BHP Copper, Inc.			
Mailing Address:	BHP Copper Inc.			
	Pinto Valley Operations			
	P.O. Box 100			
	Miami, AZ 85539			
Facility Name and Location:	BHP Copper Inc.			
	Copper Cities Unit			
	Hwy. 88, 3 mi. North of Miami			
	Miami, AZ 85539			

#### **Regulatory Status**

The Copper Cities mine facility is located within the Pinal Creek Water Quality Assurance Revolving Fund (WQARF) site. The Pinal Creek WQARF site includes the mine sites Phelps Dodge Miami, Inc. (Phelps Dodge Miami Mine, formerly known as the Inspiration Mine) and BHP Copper, Inc. (the Miami Mine, the Copper Cities Mine, the Old Dominion Mine, Solitude Tailings, and related properties).

The source control actions began in 1986 under an order from the Environmental Protection Agency (EPA) for violations of the Clean Water Act. In 1989, the Pinal Creel site was listed on the WQARF Priority List by the State of Arizona and the Pinal Creek Work Group (consortium of Phelps Dodge, BHP Copper Inc., and Inspiration Consolidated Copper Co.) was formed to conduct the remedial actions.

In 1997, a Consent Order governing the clean up was signed, and was approved by the United States District Court in 1998. The site was placed on the WQARF Registry in 1998 and an administrative order to implement an early response action was signed to expedite the construction of a groundwater treatment plant, remove contaminated groundwater at the leading edge of the acid-metal plume, and to prevent further degradation of the perennial reach of Pinal Creek.

The major contaminants of concern at the Pinal Creek WQARF site include aluminum, arsenic, beryllium, cadmium, chromium, copper, cobalt, fluoride, iron, lead, manganese, mercury, nickel, radium, sulfate, total dissolved solids, uranium, and zinc.

Various remedial actions at the Pinal Creek WQARF site have been conducted to date and include: groundwater extraction from the alluvial aquifer, groundwater containment, groundwater slurry walls, a private well replacement program, risk assessments, groundwater feasibility studies, facility upgrades, closure of impoundments, capping of tailings/waste rock piles, pumpback systems, storm water controls, and the construction of two lime neutralization treatment plants.

The Copper Cities mine site contains various facilities which have been deferred to WQARF in accordance with ARS 49-250.B.18, and are considered exempt for APP purposes. The source areas identified to date by WQARF include exempt facilities such as tailings piles/impoundments, the West Leach Dump, the East Leach Dump, numerous waste rock piles, and the No 6 Remedial Sump. Acidic, metal laden groundwater plumes have been identified in the Lost Gulch and Tinhorn Wash Sub basins. An approval remedial action plan for source control has not been submitted by Copper Cities, and therefore once site characterizations are completed under WQARF, additional sources areas may be identified.

## **Facility Description**

The BHP Copper, Inc., Copper Cities Unit is located in Southern Gila County, along State Highway 60, 3 miles north of the town of Miami, Arizona. The site consists of two pits, two main leach dumps, waste rock piles, and a variety of impoundments and diversion structures used to transport and or impound process water, remedial water and/or stormwater. There are twenty-four impoundments, conveyances and waste rock dumps regulated under the APP.

Although active leaching of east and west leach dumps and waste rock piles occurred from 1962 to 1982, passive leaching of the waste rock and leach dumps continues. Process water from the passive leaching operation is routed through a series of impoundments and other facilities to the Copper Cities Deep Pit or the Diamond H Pit. The Copper Cities Deep Pit is permitted separately under aquifer protection permit (APP) number P-101888 while the Diamond H Pit is included in a remedial action that has been approved by the department and is exempt from the APP program in accordance with A.R.S. § 49-250.B.18. Process water from the Copper

Cities Deep Pit is transported through a four mile pipeline over Phelps Dodge property, which is located immediately to the south. Process water from the Diamond H pit is pumped to the Pinto Valley Concentrator.

#### II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY

The APP Compliance Section, Section 3.0 identifies the requirements that must be met to comply with facility BADCT.

## III.COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

## **Monitoring and Reporting Requirements**

Groundwater at the Copper Cities site occurs in three geologic units: the alluvial aquifer of Tinhorn Wash, Lost Gulch and Pinal Creek. The second unit is the Gila Conglomerate. The third unit is fractured crystalline bedrock consisting of monzonite and quartzite.

The depth to groundwater ranges from, at the surface (springs) to approximately 167 feet below ground surface (bgs). Groundwater flow on the western portion of the site generally follows pre-mining topography and flows south toward Lost Gulch. Groundwater on the eastern portion of the site, the generally flows east toward Miami Wash and Pinal Creek.

The most significant structural feature at the site is the Miami Fault. The east side of the fault is primarily Gila Conglomerate. The west side of the fault consists of various types of bedrock including monzonite, quartzite, schist, dacite, and diabase.

The mine site is separated into seven sub-basins which include: Myberg, Lost Gulch, Copper Cities Deep Pit, Tinhorn Wash, No1, No 5, and No 8 Sub-basins. The Copper Cities Deep Pit Sub-basin is permitted separately as the Copper Cities Deep Pit APP #101888. The No 8 Sub-basin does not contain any APP facilities, and will not be addresses in this permit. There are two Pollutant Management Areas (PMAs) at the site, the West PMA and the East PMA.

## **Points of Compliance (P.O.C)**

Ten points of compliance (POC) are established for this facility. The POC wells are designated by the following monitoring locations:

Well ID	Sub-basin	PMA	Latitude	Longitude
CC-302	Lost Gulch	West	Need	Need
CC-303	Lost Gulch	West	Need	Need
CC-304	Lost Gulch	West	Need	Need
CC-532	Tinhorn Wash	East	Need	Need
CC-533	Tinhorn Wash	East	Need	Need
CC-534	Tinhorn Wash	East	Need	Need
CC-154	Tinhorn Wash	East	Need	Need
No.1 Adit Caison Well	No. 1	East	Need	Need
CC-530	No. 1	East	Need	Need
CC-964	No. 5	East	Need	Need

The ten POC groundwater monitoring wells are both of non-hazardous and hazardous designations.

#### IV. STORM WATER AND SURFACE WATER CONSIDERATIONS

The mine areas in this permit are contained within ephemeral streams comprising the Pinal Creek Drainage Basin. Surface water on the eastern portion of the site drains to Pinal Creek, to the east. Stormwater on the western portion of the site drains either to the Copper Cities Deep Pit and Diamond H pit or down the Lost Gulch sub-basin, offsite, toward the former Webster Lake. All drainages in the vicinity are ephemeral. Stormwater from upgradient areas is diverted around permitted facilities, as appropriate. The permitted facilities are sized to incorporate the 100-year, 24-hour storm event, while maintaining appropriate freeboard.

#### V. COMPLIANCE SCHEDULE

The Compliance Section (Section 3.0) of the APP contains two tables which list the Hydrologic and Engineering issues that the applicant must address as part of the APP approval.

#### VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

#### **Technical Capability**

BHP Copper, Inc. has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A202(B).

ADEQ requires that appropriate documents be sealed by an Arizona registered geologist or professional engineer. This requirement is a part of an on-going demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

## Financial Capability

BHP Copper, Inc. must demonstrate financial capability necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49-243(N) and A.A.C. R18-9-A203. The Compliance Schedule of the permit requires the applicant to provide the Financial Assurance Mechanism to be used to cover the Closure and Post-Closure costs within 3 months of permit issuance. The permittee shall maintain financial capability throughout the life of the facility.

## **Zoning Requirements**

Mines are exempt from zoning requirements per A.R.S. § 11-830.

#### VII. ADMINISTRATIVE INFORMATION

## **Public Notice (A.A.C. R18-9-108(A))**

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.

## Public Comment Period (A.A.C. R18-9-109(A))

The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

## **Public Hearing (A.A.C R18-9-109(B))**

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

## VIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality Ground Water Section – APP & Drywell Unit

Attn: Barry Rechtorovich

1110 W. Washington St., Mail Code 5415B-3

Phoenix, Arizona 85007 Phone: (602) 771-4789

